EXHIBIT A

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Jason Sterne, et al.
For	:	METHOD AND SYSTEM FOR USING A QUEUING DEVICE AS A LOSSLESS STAGE IN A NETWORK DEVICE IN A COMMUNICATIONS NETWORK
Serial No.:	:	11/377,578
Filed	:	March 17, 2006
Art Unit	:	2419
Examiner	:	Hong Sol Cho
Att. Docket	:	ALC 3229
Confirmation No.	:	5342

AMENDMENT UNDER 37 C.F.R § 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated July 2, 2010, please amend the above-identified application as set forth below:

SPECIFICATION AMENDMENTS begin on page 2 of this paper.

CLAIM AMENDMENTS begin on page 3 of this paper.

REMARKS/ARGUMENTS begin on page 14 of this paper.

SPECIFICATION AMENDMENTS

Please replace the paragraph [0030] with the following rewritten paragraph:

According to one embodiment, the upstream device 120 may forward or relay a message from the queuing device 140 (i.e., with respect to controlling the rate at which packets are sent to the queuing device 140) to an upstream network device (not shown but similar to network device 110) in the network 100 to thereby control the rate [[that]] at which the upstream device 120 receives packets from the upstream network device.

CLAIM AMENDMENTS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1. (Currently Amended) A method for incorporating a queuing device as a lossless processing stage in a network device in a communications network between an upstream device and a downstream device in the network device, comprising:

monitoring a depth of a queue in the queuing device, wherein the queue receives packets from the upstream device within the network device, and the queuing device acts as a discard point by discarding packets when the queue is full, wherein the upstream device is a traffic manager;

if the depth of the queue passes a predetermined threshold, sending a message to the upstream device to reduce a rate at which packets are sent to the queuing device to prevent the queue from filling, thereby preventing packet discarding and loss by the queuing device; [[and]]

sending a message reporting the depth of the queue to the upstream device to thereby enable the upstream device to determine whether to reduce or increase the rate at which the upstream device sends packets to the queuing device; and

sending the message from the upstream device to an upstream network device to thereby control a rate at which the upstream device receives packets from the upstream network device.

2. (Previously Presented) The method of claim 1, further comprising, if the depth drops below the predetermined threshold:

sending a message to the upstream device to increase the rate at which packets are sent to the queuing device.

3. (Canceled)

4. (Previously Presented) The method of claim 1, wherein the monitoring further comprises:

comparing a rate at which packets enter the queuing device to a rate at which packets exit the queuing device.

5. (Previously Presented) The method of claim 1, wherein the network device is a router, switch, or gateway.

6. (Canceled).

7. (Previously Presented) The method of claim 1, wherein the queuing device is a network processor or traffic manager.

8. (Previously Presented) The method of claim 1, wherein the packets are at least one of Internet Protocol ("IP") packets, multiprotocol label switching ("MPLS") packets, asynchronous transfer mode ("ATM") packets, and frame relay packets.

9. (Currently Amended) A system for incorporating a queuing device as a lossless processing stage in a network device in a communications network between an upstream device and a downstream device in the network device, the system comprising:

a processor coupled to the queuing device;

and, modules executed by the processor, the modules including:

a module for monitoring a depth of a queue in the queuing device, wherein the queue receives packets from the upstream device within the network device and the queuing device acts as a discard point by discarding packets when the queue is full, wherein the upstream device is a traffic manager;

a module for, if the depth of the queue passes a predetermined threshold, sending a message to the upstream device to reduce a rate at

which packets are sent to the queuing device to prevent the queue from filling, thereby preventing packet discarding and loss by the queuing device; [[and]]

a module for sending a message reporting the depth of the queue to the upstream device to thereby enable the upstream device to determine whether to reduce or increase the rate at which the upstream device sends packets to the queuing device; and

a module for sending the message from the upstream device to an upstream network device to thereby control a rate at which the upstream device receives packets from the upstream network device.

10. (Previously Presented) The system of claim 9, further comprising:

a module for, if the depth drops below the predetermined threshold, sending a message to the upstream device to increase the rate at which packets are sent to the queuing device.

11. (Canceled)

12. (Previously Presented) The system of claim 9, wherein the module for monitoring further comprises:

a module for comparing a rate at which packets enter the queuing device to a rate at which packets exit the queuing device.

13. (Previously Presented) The system of claim 9, wherein the network device is a router, switch, or gateway.

14. (Canceled) .

15. (Previously Presented) The system of claim 9, wherein the queuing device is a network processor or traffic manager.

16. (Previously Presented) The system of claim 9, wherein the packets are at least one of Internet Protocol ("IP") packets, multiprotocol label switching ("MPLS") packets, asynchronous transfer mode ("ATM") packets, and frame relay packets.

17. (Previously Presented) The system of claim 9, wherein the system is implemented within the queuing device.

18. (Previously Presented) The system of claim 9, wherein the system is implemented within a general purpose processor within the network device.

19. (Previously Presented) The system of claim 9, wherein the system is implemented with a field programmable gate array ("FPGA") within the network device.

20. (Previously Presented) The system of claim 9, wherein the system is implemented within a network management system ("NMS") coupled to the network device over the network.

21. (Currently Amended) A method for incorporating an integrated queuing and packet processing device as a lossless processing stage in a network device in a communications network between an upstream device and a downstream device in the network device, the method comprising:

monitoring a depth of a queue in the integrated device, wherein the queue receives packets from the upstream device within the network device, the packets from the upstream device include packets having different priorities arbitrated by the upstream device, and the integrated device acts as a discard point by discarding packets when the queue is full, wherein the upstream device is a traffic manager;

if the depth of the queue passes a predetermined threshold, sending a message to the upstream device to reduce a rate at which packets are sent to the integrated device to prevent the queue from filling and thereby preventing packet

discarding and loss by the integrated device, wherein a rate at which data is sent to the integrated device differs from a rate at which data is sent from the integrated device due to packet processing within the integrated device; [[and]]

sending a message reporting the depth of the queue to the upstream device to thereby enable the upstream device to determine whether to reduce or increase the rate at which the upstream device sends packets to the integrated device; and

sending the message from the upstream device to an upstream network device to thereby control a rate at which the upstream device receives packets from the upstream network device.

22. (Previously Presented) The method of claim 21, further comprising, if the depth drops below the predetermined threshold:

sending a message to the upstream device to increase the rate at which packets are sent to the integrated device.

23. (Canceled)

24. (Previously Presented) The method of claim 21, wherein the monitoring further comprises comparing the rate at which data is sent to the integrated device to the rate at which data is sent from the integrated device.

25. (Previously Presented) The method of claim 21, wherein the network device is a router, switch, or gateway.

26. (Previously Presented) The method of claim 21, wherein the upstream device is another integrated device.

27. (Previously Presented) The method of claim 21, wherein the integrated device is a network processor or traffic manager.

28. (Previously Presented) The method of claim 21, wherein the packets are at least one of Internet Protocol ("IP") packets, multiprotocol label switching ("MPLS") packets, asynchronous transfer mode ("ATM") packets, and frame relay packets.

29. (Currently Amended) A queuing device for incorporation as a lossless processing stage in a network device in a communications network between an upstream device and a downstream device in the network device, the queuing device comprising:

a processor coupled to a queue, wherein the queue receives packets from the upstream device within the network device;

and, modules executed by the processor, the modules including:

a module for monitoring a depth of the queue, the queuing device acting as a discard point by discarding packets when the queue is full;

a module for, if the depth of the queue passes a predetermined threshold, sending a message to the upstream device to reduce a rate at which packets are sent to the queuing device to prevent the queue from filling and thereby preventing packet discarding and loss by the queuing device, wherein the upstream device is a traffic manager; [[and]]

a module for sending a message reporting the depth of the queue to the upstream device to thereby enable the upstream device to determine whether to reduce or increase the rate at which the upstream device sends packets to the queuing device; and

a module for sending the message from the upstream device to an upstream network device to thereby control a rate at which the upstream device receives packets from the upstream network device.

30. (Previously Presented) The queuing device of claim 29, further comprising:

a module for, if the depth drops below the predetermined threshold, sending a message to the upstream device to increase the rate at which packets are sent to the queuing device.

31. (Canceled)

32. (Previously Presented) The queuing device of claim 29, wherein the module for monitoring further comprises a module for comparing a rate at which packets enter the queuing device to a rate at which packets exit the queuing device.

33. (Previously Presented) The queuing device of claim 29, wherein the network device is a router, switch, or gateway.

34. (Canceled).

35. (Previously Presented) The queuing device of claim 29, wherein the queuing device is a network processor or traffic manager.

36. (Previously Presented) The queuing device of claim 29, wherein the packets are at least one of Internet Protocol ("IP") packets, multiprotocol label switching

("MPLS") packets, asynchronous transfer mode ("ATM") packets, and frame relay packets.

37. (Previously Presented) The method of claim 1, further comprising, after the queue has been drained:

alerting the upstream device to resume sending traffic to the queue.

38. (Previously Presented) The method of claim 1, further comprising:

periodically reporting the depth of the queue to provide for error recovery.

REMARKS/ARGUMENTS

Claims 1, 2, 4, 5, 7-10, 12, 13, 15-22, 24-30, 32, 33, and 35-38 are pending in this application. Claims 1, 9, 21, and 29 are independent and are also amended. Claims 6, 14, and 34 are canceled without prejudice or disclaimer of their subject matter. Applicant respectfully submits that this Amendment does not add any new matter and requests reconsideration and allowance of all pending claims in view of the following remarks.

REJECTIONS UNDER 35 U.S.C. § 103

On pages 2-4, the Office Action rejects claims 1, 2, 4-10, 12-18, 20-22, 24-30, and 32-36 under 35 U.S.C. § 103(a) as allegedly unpatentable over Pub. No. US2005/0185581 to Bradford et al. ("Bradford") in view of U.S. Patent No. 5,995,486 to Iliadis ("Iliadis"), further in view of Pub. No US2006/0133322 to Vannithamby et al. ("Vannithamby"). On page 4, the Office Action rejects claim 19 as being unpatentable over Bradford in view of Iliadis, further in view of Vannithamby, and yet further in view of Pub. No. US2002/0163885 to Assa et al. ("Assa"). On pages 4 and 5, the Office Action rejects claim 37 as unpatentable over Bradford in view of Iliadis, further in view of Vannithamby, and yet further in view of Pub. No. US2003/0179720 to Cuny ("Cuny"). On page 5, the Office Action rejects claim 38 as

unpatentable over Bradford in view of Iliadis, further in view of Vannithamby, and yet further in view of U.S. Patent No. 5,050,066 to Myers et al. ("Myers").

Independent claim 1 recites, in part, "sending a message . . . to reduce a rate at which packets are sent to the queuing device to prevent the queue from filling and thereby preventing packet discarding and loss by the queuing device" (emphasis added). Claims 9, 21, and 29 contain similar recitations. Applicant respectfully submits that the references of record, alone or in combination, fail to disclose, suggest, or teach this subject matter.

On pages 2 and 3, the Office Action correctly concedes that Bradford fails to disclose this subject matter. To remedy this admitted deficiency, the Office Action then applies lines 32-46 of col. 2 in Iliadis. Applicant respectfully submits that the cited excerpts recite "background" for Iliadis, disclosing "various applications" or "schemes" in four different documents related to a receiving node sending a stop signal to an upstream node. See lines 32-33 of col. 2 in Iliadis.

Independent claim 1 also recites, in part, "sending a message to the upstream device to reduce a rate at which packets are sent . . . to prevent the queue from filling" (emphasis added). Claims 9, 21, and 29 contain similar recitations. Applicant respectfully submits that the references of record, alone or in combination, fail to disclose, suggest, or teach this subject matter.

On page 3, the Office Action correctly concedes that Bradford and Iliadis fail to disclose this subject matter. The Office Action then attempts to remedy the admitted deficiencies by applying the teachings of Vannithamby. In particular, the Office Action relies upon lines 14-16 of paragraph [0028] of Vannithamby.

Applicant respectfully submits that Vannithamby fails to remedy the deficiencies of Bradford in view of Iliadis. While Vannithamby's mobile stations may report a "buffer level to the base station," Vannithamby's base station is not equivalent to the recited upstream device because Vannithamby fails to provide adjustment of the recited "rate at which the upstream device sends packets to the queuing device." Instead, Vannithamby's rate scheduler 62 determines "a scheduled rate for the mobile station 12." See paragraph [0032].

In other words, Vannithamby's base station notifies a particular mobile station of the amount of bandwidth available for use by the mobile station. Consequently, Vannithamby's mobile station is the device that changes its transmission rate.

On page 4, the Office Action rejects dependent claims 6, 7, 14, 15, 20, 26, 27, 34, and 35 by alleging that Bradford discloses their subject matter. Applicant respectfully submits that while claim 7 of Bradford may recite a "data flow manager structure," Bradford does not actually disclose that an **upstream** device is a traffic manager.

For example, paragraph [0030] of the published version of the specification indicates that "the upstream device 120 may forward or relay a message from the queueing device 140 . . . to an upstream network device . . . to thereby control the rate at which the upstream device 120 receives packets from the upstream network device." In our proposal, we have incorporated a version of this subject matter into the independent claims to illustrate how traffic management occurs.

For the reasons listed above, Applicant respectfully submits that claims 1, 9, 21, and 29 are allowable.

Claim 38 recites: "**periodically** reporting the **depth of the queue** to provide for **error recovery**" (emphasis added). Applicant respectfully submits that the references of record, alone or in combination, fail to disclose, suggest, or teach this subject matter.

On page 5, the Office Action appears to concede that Bradford, Iliadis, and Vannithamby lack this subject matter. To remedy this admitted deficiency, the Office Action applies lines 55-65 of col. 3 in Myers, alleging that Myers "discloses using information as to the queue depth for error recovery." In response, Applicant respectfully submits that Myers actually discloses that "B queues are the secondary queues which contain delayed information for use in error recovery." There is no suggestion that Myers periodically reports queue depths to provide for error

recovery. Instead, Myers only generates "a few status lines from queue depths (256)," an operation that is not periodic. See lines 11-13 of col. 5.

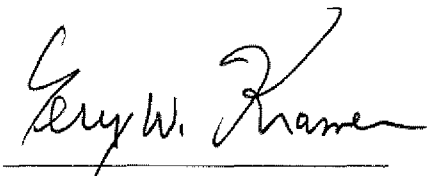
Also, Claims 2, 4, 5, 7, 8, 37, and 38 depend from claim 1. Claims 10, 12, 13, and 15-20 depend from claim 9. Claims 22 and 24-28 depend from claim 21. Claims 30, 32, 33, 35, and 36 depend from claim 29. Thus, claims 2, 4, 5, 7, 8, 10, 12, 13, 15-20, 22, 24-28, 30, 32, 33, 35, and 36 are allowable at least due to their respective dependencies from allowable claims. Claims 6, 14, and 34 are canceled. According, Applicant respectfully requests withdrawal of the rejections of claims 1, 2, 4, 5, 7-10, 12, 13, 15-22, 24-30, 32, 33, and 35-38 under 35 U.S.C. § 103(a).

CONCLUSION

While we believe that the instant amendment places the application in condition for allowance, should the Examiner have any further comments or suggestions, it is respectfully requested that the Examiner telephone the undersigned attorney in order to expeditiously resolve any outstanding issues.

In the event that the fees submitted prove to be insufficient in connection with the filing of this paper, please charge our Deposit Account Number 50-0578 and please credit any excess fees to such Deposit Account.

Respectfully submitted,
KRAMER & AMADO, P.C.



Date: July 26, 2010

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